**Advanced Data Analytics**

**Dataset Description**

The dataset provided is a subset of data which has been made publicly available by the city of Chicago. This dataset includes taxi trips from January 2023 till July 2023, reported to the City of Chicago in its role as a regulatory agency. Kindly refer to the *Definitions* tab within the file provided for further details about the fields. The dataset has already undergone cleaning and reformatting to make it easier for data analysis purposes.

**Data Analysis**

As a data analyst at the Office for National Statistics in Chicago, you have been tasked with delivering a presentation focusing on the taxi trips within the city. Using various statistical principles and concepts, you are required to analyse the dataset and deliver your findings to the Secretary of Transportation for Illinois. Please highlight your key findings and state any assumptions made.

**Tasks**

You must complete the following tasks. Please show all your workings and calculations in an organised manner. Remember to be original and think outside the box, that’s what makes an analyst stand out at work!

1. Use descriptive statistics and other visual techniques to summarise the results and comment on your findings.
2. Apply forecasting techniques to predict the total fare on a monthly basis till the end of 2023 and comment on your results.
3. Please create a data model (either your own or from one taught at class) to demonstrate some useful application. Once created, use the data modelling techniques to analyse the data.
4. Conduct regression analysis using the time and distance against the *Fare* variable. Through this analysis, please elaborate whether there is any correlation or significance between the independent and dependent variables.
5. Analyse the dataset and provide at least three valuable insights. The insights must provide valuable information that is well explained and supported by numbers.

*Hint: Visualise the data using the appropriate visuals to support your analysis*.